REMARKS

Claims 1, 6, 8-9, 12, 14 and 21-22 are now in this application. Claims 1, 6, 8-9, 12 and 14 are amended. Claims 2-5, 7, 10-11, 13 and 15 are canceled. Claims 21-22 are added as new claims.

The Examiner objected to the specification and drawings, indicating that the specification includes a reference numeral 64 not found in the drawings. The Examiner's attention is directed to the lower left hand corner of Fig. 2 in which reference numeral 64 is shown. Accordingly, it is requested that the objection to the specification and drawings be withdrawn.

Claim 15 was objected to as including an unclear limitation. Claim 15 has been canceled, and the objection to this claim is now moot.

Claim 5 was rejected under 35 U.S.C. §112, first paragraph, as failing to provide enablement for a claim limitation to "converting from a DC output to an AC output." Claim 5 has been canceled, rendering this rejection moot.

Claims 8 and 19 were rejected under 35 U.S.C. §112, second paragraph, in that the term "generally" in these claims was considered by the Examiner to render these claims indefinite. Claim 19 has been canceled and claim 8 has been amended to remove this term from the claim.

Claims 1-5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuoka et al. (US 5,001,358) and Pai et al. (US 2003/0043596). Claim 1 has been amended to distinguish the invention over the cited prior as described below.

The present invention is directed to cable structure that is configured to meet physical constraints found in production sensing environments to enable, for example, a machine equipped with an AC power source and controller for receiving signals from an AC sensor, i.e., a sensor having an ON/OFF switched output connection, to be readily converted to use with a DC sensor that requires a DC power source and that provides a DC sensor output, i.e., a current sourcing or current sinking output. In addition to the electrical requirements for converting from an AC sensor to a DC sensor, there are physical constraints on incorporating such a conversion apparatus into a cable extending from the power source/controller location to the sensor location. Specifically, the cable including the conversion/interface electronics must be capable of threading through the conduit structure of the machinery, which typically comprises

a one inch conduit. Claim 1 has been amended to include additional limitations that further define the power convertor and sensor interface elements in relation to a particular support structure formed by an elongated circuit board, and cable portions attached to opposing edges of the circuit board. In particular, the power convertor and sensor interface are recited as being mounted to an elongated circuit board having a longitudinal dimension that is longer than its width dimension. First and second cable portions are recited as each having first ends attached to opposing longitudinal edges of the circuit board, and having second ends distal from the circuit board. In addition, the circuit board including the power convertor and the sensor interface, is recited as being encased in a potting material; and an overmold material surrounds the potting material, extends past the ends of the circuit board and covers the first ends of the first and second cable portions.

Neither Matsuoka et al. nor Pai et al. disclose providing the recited cable structure, and in particular do not disclose a cable structure incorporating an elongated circuit board at an intermediate portion between two cable portions. Although McNair et al. was cited in the Office Action as disclosing a circuit board, there is no disclosure in McNair et al. which would lead one of ordinary skill in the art to construct the present cable interface including the limitations to an elongated circuit board having cable connections located at opposing longitudinal ends of the circuit board. Suggestion for such a structural limitation would only be provided by reference to Applicant's disclosure, which provides the sole suggestion for providing a cable interface between a power source/controller and a sensor, where such a cable interface is defined by an elongated structure that may be threaded through a conduit.

There is also no suggestion in the prior art to provide the overmold structure as it is now recited in claim 1. McLachlin et al. was cited in the Office Action for a disclosure of a PVC jacket. This disclosure does not suggest an overmold material surrounding a circuit board and extending past the circuit board over the ends of cable portions attached to opposing edges of the cable portions.

It is well settled that use of hindsight combination of references to establish obviousness is not permissible. As the Court in Sunsonics, Inc. v. Aerosonic Corp., 38 USPQ 2d 1551, 1554 (Fed. Cir. 1996) stated:

> "To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction -- an illogical and inappropriate process by which to determine patentability."

It is submitted that the structure recited in amended claim 1 is not disclosed or taught by any combination of the cited prior art. As discussed above, in addition to the references failing to teach the limitations now recited in claim 1, there is no proper basis for forming a combination of the references to arrive at the cable interface now claimed.

Claim 8 recites that the elongated shroud structure of the cable interface defines an elongated cylindrical member and that the cylindrical member includes tapered ends tapering from an outer surface of the elongated cylindrical member toward the first and second cable portions. It should be noted that the specification describes particular design considerations forming the basis for the shape of the elongated shroud structure (see page 7, lines 11-15). Specifically, the cylindrical shroud having tapered ends as well as a diameter less than one inch is designed to facilitate conducting the shroud structure through the cable conduits in existing process machines The Examiner did not include a statement rejecting claim 8 on the merits, but indicated on page 6 that it would have been obvious to modify the shape of the housing of Matsuoka et al. to be cylindrical with tapered ends "since it has been held that changes in size or proportions and shape is obvious." The application of such per se rules has been rejected by the courts. For example, the Federal Circuit has held:

> "The use of *per se* rules, while undoubtedly less laborious than a searching comparison of the claimed invention -- including all of its limitations -- with the teachings of the prior art, flouts §103 and the fundamental case law applying it." In re Ochiai, 37 USPQ 2d 1127 (Fed Cir. 1995).

No prior art suggesting modification of the cited references to meet the limitations of claim 8 has been cited. Accordingly, it is believed that claim 8 further distinguishes the invention over the prior art.

New claim 21 depends from claim 1 and is presented to further recite the structure of the elongated circuit board, and is supported by the specification at page 6, lines 11-14.

New claim 22 depends from claim 21 and further recites limitations directed to the physical dimensions of the elongated shroud structure which are not taught by the prior art.

In view of the foregoing amendments and remarks, it is respectfully submitted that claims 1, 6, 8-9, 12, 14 and 21-22 of the present application are in condition for allowance.

If the present amendment raises any questions or the Examiner believes that an interview would facilitate prosecution of the present application, he is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

STEVENS & SHOWALTER, L.L.P.

By _____
Michael D. Folkerts
Registration No. 33,348

7019 Corporate Way
Dayton, OH 45459-4238
Telephone: (937) 438-6848
Facsimile: (937) 438-2124
E-mail: mfolkerts@speakeasy.net